IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): An adsorption heat pump which comprises an adsorbate, an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm which, in the relative vapor pressure range of from 0.05 to 0.30, has a relative vapor pressure region in which a change in relative vapor pressure of 0.15 results in a change in water adsorption amount of 0.18 g/g or larger.

Claim 2 (Original): The adsorption heat pump as claimed in claim 1, wherein the adsorbent comprises a zeolite having a framework density in the range of from 10.0 T/1,000 Å^3 to 16.0 T/1,000 Å^3.

Claim 3 (Previously Presented): The adsorption heat pump as claimed in claim 2, wherein the adsorbent has a pore diameter of from 3 Å to 10 Å and a heat of adsorption of from 40 kJ/mol to 65 kJ/mol.

Claim 4 (Previously Presented): The adsorption heat pump as claimed in claim 1, wherein the adsorbent is a zeolite containing at least aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 5 (Original): The adsorption heat pump as claimed in claim 4, wherein the zeolite is one in which the proportions of atoms present therein are represented by the following expressions (1), (2), and (3):

$$0.001 \leqq x \leqq 0.3 \quad (1)$$

(wherein x represents the molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq y \leqq 0.6 \quad (2)$$

(wherein y represents the molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq z \leqq 0.6 \quad (3)$$

(wherein z represents the molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 6 (Previously Presented): The adsorption heat pump as claimed in claim 4, wherein the heteroatom is silicon.

Claim 7 (Previously Presented): The adsorption heat pump as claimed in claim 4, wherein the heteroatom is silicon and the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 8 (Original): The adsorption heat pump as claimed in claim 7, wherein the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals

at from -70 ppm to -92 ppm is not less than 25% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 9 (Previously Presented): The adsorption heat pump as claimed in claim 2, wherein the zeolite is one having the structure represented by CHA in terms of the code defined by International Zeolite Association (IZA).

Claim 10 (Previously Presented): The adsorption heat pump as claimed in claim 2, wherein the adsorbent has a zeolite content of 60% by weight or higher based on the whole adsorbent.

Claim 11 (Previously Presented): The adsorption heat pump as claimed in claim 1, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm in which the adsorption amount at a relative vapor pressure of 0.05 is 0.15 g/g or less.

Claim 12 (Previously Presented): An adsorption heat pump which comprises (a) an adsorbate, (b) an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, (c) a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and (d) a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part,

wherein

(1) the adsorbent comprises a zeolite containing aluminum and phosphorus in the framework structure, and

(2) the adsorbent is a water vapor adsorbent having a region in which the adsorption amount difference as determined with the following equation is 0.15 g/g or larger in the range

in which the relative vapor pressure ϕ 2b during adsorption operation in the adsorption/desorption part is from 0.115 to 0.18 and the relative vapor pressure ϕ 1b during desorption operation in the adsorption/desorption part is from 0.1 to 0.14:

Adsorption amount difference = Q2 - Q1

wherein

Q1 = adsorption amount at ϕ 1b as determined from a water vapor desorption isotherm obtained at a temperature (T3) used for desorption operation in the adsorption/desorption part

Q2 = adsorption amount at ϕ 2b as determined from a water vapor adsorption isotherm obtained at a temperature (T4) used for adsorption operation in the adsorption/desorption part,

provided that

ϕ 1b (relative vapor pressure during desorption operation in the adsorption/desorption part) = [equilibrium water vapor pressure at the temperature of coolant (T2) cooling the condenser]/[equilibrium water vapor pressure at the temperature of heat medium (T1) heating the adsorption/desorption part]

ϕ 2b (relative vapor pressure during adsorption operation in the adsorption/desorption part) = [equilibrium vapor pressure at the temperature of cold (T0) generated in the vaporization part]/[equilibrium vapor pressure at the temperature of coolant (T2) cooling the adsorption/desorption part]

(wherein T0=5 to 10°C, T 1=T3=90°C, and T2=T4=40 to 45°C).

Claim 13 (Original): The adsorption heat pump as claimed in claim 12, wherein T0 is 10°C and T2 is 40°C.

Claim 14 (Original): The adsorption heat pump as claimed in claim 12, wherein T0 is 5°C and T2 is 40°C.

Claim 15 (Original): The adsorption heat pump as claimed in claim 12, wherein T0 is 10°C and T2 is 45°C.

Claim 16 (Previously Presented): The adsorption heat pump as claimed in claim 12, wherein the adsorbent has a region in which the adsorption amount difference is 0.15 g/g or larger in the range in which ϕ 1b and ϕ 2b are from 0.115 to 0.18 and ϕ 1b is equal to or higher than ϕ 2b.

Claim 17 (Previously Presented): The adsorption heat pump as claimed in claim 12, wherein the zeolite comprises a heteroatom in the framework structure.

Claim 18 (Previously Presented): The adsorption heat pump as claimed in claim 17, wherein the proportions of aluminum, phosphorus, and the heteroatom present in the zeolite are as follows:

$$0.001 \leqq x \leqq 0.3$$

(x = molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq y \leqq 0.6$$

(y = molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq z \leqq 0.6$$

(z = molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 19 (Previously Presented): The adsorption heat pump as claimed in claim 12, wherein the zeolite is a zeolite having a framework density of from 10.0 T/1,000 Å^3 to 16.0 T/1,000 Å^3.

Claim 20 (Previously Presented): An adsorption heat pump which comprises an adsorbate, an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part, wherein the adsorbent comprises a zeolite containing aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 21 (Previously Presented): An adsorption heat pump which comprises (a) an adsorbate, (b) an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, (c) a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and (d) a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part, wherein the adsorbent comprises a zeolite containing aluminum, phosphorus, and silicon in the framework structure, and that the zeolite gives a ^{29}Si-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 22-40 (Cancelled).

Claim 41 (Previously Presented): An air conditioning system for vehicles which employs the adsorption heat pump as claimed in claim 1.

Claim 42 (Previously Presented): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm which, in the relative vapor pressure range of from 0.05 to 0.30, has a relative vapor pressure region in which a change in relative vapor pressure of 0.15 results in a change in water adsorption amount of 0.18 g/g or larger.

Claim 43 (Previously Presented): The method for using an absorbent as claimed in claim 42, wherein the adsorbent comprises a zeolite having a framework density in the range of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 44 (Previously Presented): The method for using an absorbent as claimed in claim 43, wherein the adsorbent is an adsorbent having a pore diameter of from 3 Å to 10 Å and a heat of adsorption of from 40 kJ/mol to 65 kJ/mol.

Claim 45 (Previously Presented): The method for using an absorbent as claimed in claim 42, wherein the adsorbent is a zeolite containing at least aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 46 (Previously Presented): The method for using an absorbent as claimed in claim 45, wherein the zeolite is one in which the proportions of atoms present therein are represented by the following expressions (1), (2), and (3):

$$0.001 \leqq x \leqq 0.3 \tag{1}$$

(wherein x represents the molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq y \leqq 0.6 \tag{2}$$

(wherein y represents the molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq z \leqq 0.6 \tag{3}$$

(wherein z represents the molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 47 (Previously Presented): The method for using an absorbent as claimed in claim 45, wherein the heteroatom is silicon.

Claim 48 (Previously Presented): The method for using an absorbent as claimed in claim 45, wherein the heteroatom is silicon and the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 49 (Previously Presented): The method for using an absorbent as claimed in claim 48, wherein the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated

intensity area for the signals at from -70 ppm to -92 ppm is not less than 25% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 50 (Previously Presented): The method for using an absorbent as claimed in claim 43, wherein the zeolite is one having the structure represented by CHA in terms of the code defined by International Zeolite Association (IZA).

Claim 51 (Previously Presented): The method for using an absorbent as claimed in claim 43, wherein the adsorbent has a zeolite content of 60% by weight or higher based on the whole adsorbent.

Claim 52 (Previously Presented): The method for using an absorbent as claimed in claim 42, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm in which the adsorption amount at a relative vapor pressure of 0.05 is 0.15 g/g or less.

Claim 53 (Previously Presented): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate,

wherein

(1) the adsorbent comprises a zeolite containing aluminum and phosphorus in the framework structure, and

(2) the adsorbent is a water vapor adsorbent having a region in which the adsorption amount difference as determined with the following equation is 0.15 g/g or larger in the range in which the relative vapor pressure ϕ 2b during adsorption operation in the

adsorption/desorption part is from 0.115 to 0.18 and the relative vapor pressure ϕ 1b during desorption operation in the adsorption/desorption part is from 0.1 to 0.14:

Adsorption amount difference = Q2 - Q1

wherein

Q1 = adsorption amount at ϕ 1b as determined from a water vapor desorption isotherm obtained at a temperature (T3) used for desorption operation in the adsorption/desorption part, and

Q2 = adsorption amount at ϕ 2b as determined from a water vapor adsorption isotherm obtained at a temperature (T4) used for adsorption operation in the adsorption/desorption part,

provided that

ϕ 1b (relative vapor pressure during desorption operation in the adsorption/desorption part) = [equilibrium water vapor pressure at the temperature of coolant (T2) cooling the condenser]/[equilibrium water vapor pressure at the temperature of heat medium (T1) heating the adsorption/desorption part], and

ϕ 2b (relative vapor pressure during adsorption operation in the adsorption/desorption part) = [equilibrium vapor pressure at the temperature of cold (T0) generated in the vaporization part]/[equilibrium vapor pressure at the temperature of coolant (T2) cooling the adsorption/desorption part] (wherein T0=5 to 10°C, T1=T3=90°C, and T2=T4=40 to 45°C).

Claim 54 (Previously Presented): The method for using an absorbent as claimed in claim 53, wherein T0 is 10°C and T2 is 40°C.

Claim 55 (Previously Presented): The method for using an absorbent as claimed in claim 53, wherein T0 is 5°C and T2 is 40°C.

Claim 56 (Previously Presented): The method for using an absorbent as claimed in claim 53, wherein T0 is 10°C and T2 is 45°C.

Claim 57 (Previously Presented): The method for using an absorbent as claimed in claim 53, wherein the adsorbent has a region in which the adsorption amount difference is 0.15 g/g or larger in the range in which ϕ 1b and ϕ 2b are from 0.115 to 0.18 and ϕ 1b is equal to or higher than ϕ 2b.

Claim 58 (Previously Presented): The method for using an absorbent as claimed in claim 53, wherein the zeolite comprises a heteroatom in the framework structure.

Claim 59 (Previously Presented): The method for using an absorbent as claimed in claim 58, wherein the proportions of aluminum, phosphorus, and the heteroatom present in the zeolite are as follows:

$$0.001 \leqq x \leqq 0.3$$

(x =molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq y \leqq 0.6$$

(y = molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leqq z \leqq 0.6$$

(z = molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 60 (Previously Presented): The method for using an absorbent as claimed in claim 53, wherein the zeolite has a framework density of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 61 (Previously Presented): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate, wherein the adsorbent comprises a zeolite containing aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 62 (Previously Presented): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate, wherein the adsorbent comprises a zeolite containing aluminum, phosphorus, and silicon in the framework structure, and that the zeolite gives a ^{29}Si-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 63 (New): The adsorption heat pump of Claim 1, wherein the vaporization part generates cold.

Claim 64 (New): The adsorption heat pump of Claim 1, wherein the vaporization part is a cooling source.

Claim 65 (New): The adsorption heat pump of Claim 63, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 66 (New): The adsorption heat pump of Claim 12, wherein the vaporization part generates cold.

Claim 67 (New): The adsorption heat pump of Claim 12, wherein the vaporization part is a cooling source.

Claim 68 (New): The adsorption heat pump of Claim 66, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 69 (New): The adsorption heat pump of Claim 20, wherein the vaporization part generates cold.

Claim 70 (New): The adsorption heat pump of Claim 20, wherein the vaporization part is a cooling source.

Claim 71 (New): The adsorption heat pump of Claim 69, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 72 (New): The adsorption heat pump of Claim 21, wherein the vaporization part generates cold.

Claim 73 (New): The adsorption heat pump of Claim 21, wherein the vaporization part is a cooling source.

Claim 74 (New): The adsorption heat pump of Claim 72, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 75 (New): The adsorption heat pump of Claim 42, wherein the vaporization part generates cold.

Claim 76 (New): The adsorption heat pump of Claim 42, wherein the vaporization part is a cooling source.

Claim 77 (New): The adsorption heat pump of Claim 75, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 78 (New): The adsorption heat pump of Claim 53, wherein the vaporization part generates cold.

Claim 79 (New): The adsorption heat pump of Claim 53, wherein the vaporization part is a cooling source.

Claim 80 (New): The adsorption heat pump of Claim 78, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 81 (New): The adsorption heat pump of Claim 61, wherein the vaporization part generates cold.

Claim 82 (New): The adsorption heat pump of Claim 61, wherein the vaporization part is a cooling source.

Claim 83 (New): The adsorption heat pump of Claim 81, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 84 (New): The adsorption heat pump of Claim 62, wherein the vaporization part generates cold.

Claim 85 (New): The adsorption heat pump of Claim 62, wherein the vaporization part is a cooling source.

Claim 86 (New): The adsorption heat pump of Claim 84, wherein an air stream is cooled by the cold generated by the vaporization part.

Claim 87 (New): The adsorption heat pump of Claim 1, wherein the adsorbent is a zeolite containing at least aluminum, phosphorus, and silicon as a heteroatom in a framework structure and the zeolite has a SiNMR spectrum in which the integrated intensity area for signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 88 (New): The adsorption heat pump of Claim 1, wherein the adsorbent is an adsorbent having a pore diameter of from 3 Å to 10 Å and has a differential heat of adsorption of from 40 kJ/mol to 65 kJ/mol.